

WHAT IS CLAIMED:

1. A surgical stapler having a distal end onto which a tool assembly having a pair of opposing tissue engaging surfaces can be mounted for deforming a plurality of surgical fasteners through and fasten tissue, the surgical stapler comprising:

a housing having a fixed handle;

a clamping handle mounted to said housing and selectively movable relative to said fixed handle from a first position in spaced relation relative to said fixed handle to a second position closer to said fixed handle to actuate the clamping of tissue;

an adapter yoke which translates within said housing upon actuation of said clamping handle, said adapter yoke mechanically cooperating with a lead screw to actuate the tool assembly to clamp tissue;

a drive assembly including a shaft, said shaft being mechanically engaged with said lead screw such that upon selective activation of said drive assembly, said shaft rotates said lead screw to advance a roll nut distally along said lead screw to force a firing piston into a tool assembly when mounted on the housing to deform the surgical fasteners through and fastening the tissue.

2. A surgical stapler according to claim 1, wherein said drive assembly is pneumatically powered.

3. A surgical stapler according to any preceding claim, wherein said drive assembly is selectively variable to regulate the advancement of said roll nut along said lead screw which, in turn, regulates the speed at which said surgical fasteners are deformed.
4. A surgical stapler according to any preceding claim, wherein said stapler further comprises a pressure sensitive trigger which regulates the advancement of said roll nut along said lead screw which, in turn, regulates the speed at which said surgical fasteners are deformed.
5. A surgical stapler according to any preceding claim, wherein said stapler includes at least one safety which prevents activation of said drive assembly until said safety is deactivated.
6. A surgical stapler according to any preceding claim, wherein said at least one safety is automatically deactivated when said clamping handle is moved to said second position to clamp tissue.
7. A surgical stapler according to any preceding claim, wherein said roll nut includes a firing safety which prevents said roll nut from advancing to force said firing piston until said firing safety is deactivated.

8. A surgical stapler according to any preceding claim, wherein said stapler includes a switch for reversing the rotation of said shaft of said drive assembly upon activation thereof.

9. A surgical stapler according to any preceding claim, wherein said shaft rotates upon activation of said drive assembly which in turn rotates said lead screw.

10. A surgical stapler, comprising:

- a housing;

- an elongated member attached to the housing;

- a tool assembly attachable to the distal end of the elongated member, said tool assembly including an anvil assembly and a cartridge assembly each having an opposing tissue engaging surface, said cartridge assembly including a plurality of surgical fasteners;

- a selectively activateable drive assembly including an actuation shaft, said actuation shaft being mechanically engaged with a lead screw such that upon selective activation of said drive assembly, said actuation shaft rotates said lead screw to advance a firing shaft and actuate said tool assembly to initially clamp tissue between opposing tissue engaging surfaces of said tool assembly and subsequently to force a firing piston into said tool assembly to deform the surgical fasteners through and fasten tissue.

11. A surgical stapler according to claim 10, wherein said actuation shaft reciprocates upon activation of said drive assembly, said actuation shaft being mechanically engaged with a converter which converts the reciprocal motion of said actuation shaft into rotary motion of said lead screw.

12. A surgical stapler according to claim 10, wherein said actuation shaft rotates upon activation of said drive assembly which in turn rotates said lead screw.

13. A surgical stapler according to claim 10, 11 or 12, wherein said stapler further comprises a pressure sensitive trigger which regulates the speed of drive assembly which, in turn, regulates the speed at which said surgical fasteners are deformed.

14. A surgical stapler according to claim 10, 11, 12 or 13, wherein said stapler further comprises a switch for reversing the rotation of said shaft of said drive assembly upon activation thereof.

15. A surgical stapler according to any preceding claim, wherein said stapler further comprises a canister for containing a supply of pressurized gas for activation of said drive assembly, said canister being internally disposed within said housing.

16. A surgical stapler according to any preceding claim, wherein said canister is selectively replaceable.

17. A surgical stapler according to any preceding claim, wherein said elongated member and said tool assembly are configured for endoscopic use.

18. A surgical stapler according to any preceding claim, wherein the surgical stapler is suitable for one-handed operation.